

OBITUARY NOTICES

HERMAN JACOBUS BOETJE, who died on the 22nd March, 1945, was born in 1879 in Java, where his father was General-Commander of the Dutch Indian Army. He received his engineering education at the technical high schools of Delft (civil engineer, 1901) and Liège (electrical engineer, 1903). For forty years—from 1903 to 1943—he served in the Dutch Posts, Telegraphs and Telephones Department, being appointed Chief Engineer and Director of Telecommunications in 1923. In this broad field of activities he showed a progressive leadership, taking much interest in the early establishment of long-distance radiocommunication, and the radio link between Holland and Java (Bandoeng) was opened as early as 1929. In the automatic telephone field he adopted the dialled toll service, with the ultimate goal of full automatic switching throughout the country. Seventy per cent of this project was realized by 1940, and it is unfortunate that this splendid system suffered severely as the result of demolition in 1945. The transmission equipment also was highly developed under his direction, Holland being one of the first countries to introduce carrier-on-cable systems on an extensive scale. In international communication circles he was well known and the value of his work was fully appreciated. During the period 1929–39 he attended all C.C.I. meetings as head of the Dutch Delegation. The Germans forced him to retire in 1943, and after the liberation his death prevented his supervision of the reconstruction of the plant which he had so promisingly developed before the war. The Dutch P.T.T. and his many friends abroad keep him in grateful remembrance.

He became a Member of The Institution in 1939.

J. D. H. VAN DER T.

FRANK BRADFORD, who died at Liverpool on the 21st October, 1945, at the age of 68, was educated at the High School, Fairfield, and at University College, Liverpool, and received his training with H. T. Boothroyd, Ltd.

In 1902 he joined the British Insulated Cable Co.'s sales organization and remained with this firm for seventeen years. Until his death he was a member of the technical sales organization of The Pirelli General Cable Works, serving first at Newcastle-on-Tyne and then at Liverpool, and he was closely in touch with all the recent developments of the employment of underground cables for use on the Grid system.

In both his business and private life he always showed the most friendly and conscientious attitude to all with whom he came in contact, and by his colleagues he will long be remembered as a ready helper and a staunch friend. During the war years his home was at all times ready to give a few hours' recreation to any members of the fighting Services who happened to be stationed in the neighbourhood.

He was at heart a very homely man, keenly interested in local affairs, photography being his chief hobby. He was a member of the Liverpool Amateur Photographic Society, and his lectures were invariably received with enthusiasm. He was also a keen amateur sportsman, and he was an active member of the South Northumberland Cricket and Tennis Club while living in that neighbourhood. Invariably when opportunity offered he attended the social functions in connection with his profession, and his local church work will also be remembered.

He joined The Institution as an Associate Member in 1903 and was elected a Member in 1944.

A. J. C.

RAYMOND BRAILLARD, who died on the 27th October, 1945, in his 57th year, was a pioneer in the field of radio engineering. After graduating at the head of his class in the École Supérieure d'Electricité in 1907, he entered the radio industry, which was then in its youth. In this capacity he constructed Navy radio equipment, and in the course of this work met Commandant Ferrié, with whom he later completed his military service in a radio-transmission unit.

Some time later he was sent to the Belgian Congo as head of a mission charged with constructing a 10-transmitter network. On returning to Europe he was appointed Director of the Laeken transmitting station, from which, early in 1914, regular broadcast programmes were radiated.

With the outbreak of the First World War, he was put in charge of military radio facilities for the Belgian Army. He organized and was one of the pioneers in the fields of mobile units and aircraft radio. He spent three years on the Yser Front and was decorated with both the Belgian and the French Croix de Guerre.

At the end of the war he returned to the Congo on a mission of short duration. Following this, he built the high-power Croix-d'Hins station for the U.S. Navy. This task completed, he returned to industry.

In 1925, radio broadcasting had made such progress that need was felt for an international radio organization. Brailard was elected President of the Technical Committee of the International Broadcasting Union (U.I.R.), and in this capacity planned the first European frequency allocations, which became known as the Geneva Plan. This task he undertook in subsequent international and European meetings for fifteen years, notably at Prague, 1929, Lucerne, 1933, and Montreux, 1939.

Himself a musician, he was a strong defender of the aesthetic quality of radio reproduction. He also founded and directed the U.I.R. Checking Centre for frequency measurements at Brussels, and his "policing" of frequencies contributed much to the well-being of pre-war broadcasting.

A firm believer in co-operation and a member of various international scientific and technical committees, he succeeded in organizing and establishing international techniques in the field of radio transmission. He was a frequent visitor to England, where he was most cordially welcomed, and was elected to Membership of The Institution in 1938. Meanwhile, he proceeded with his research in the various fields of broadcasting, and the results of his untiring efforts can now be seen in the technical layout and treatment of acoustical problems in the Brussels Maison de la Radio.

He was mobilized with the rank of Captain in September, 1939, and served at the Brussels Checking Centre. In May, 1940, at the last possible moment, he took the responsibility of transferring to France the valuable international equipment. After the collapse of France he took the equipment to Switzerland.

Later, as Head of the Engineering Department of the French Radiodiffusion Nationale, he pledged himself to the preparation of a brighter future for the scientific development to which he had devoted his life.

P. B.

GEORGE BROWN was born on the 3rd May, 1877, and died on the 28th January, 1946. He received his early education at Springburn School and Pollokshields Academy, Glasgow, and later attended evening classes at the Glasgow and West of

Scotland Royal Technical College. He began his career in the Glasgow Corporation Telephone Department, which was acquired by the Post Office in 1906, so that he became a civil servant—and a very energetic one. He obtained a detailed experience of common-battery telephone work when he was engaged in testing at the Glasgow Central Exchange, and after the exchange was opened, in 1910, he remained there on maintenance work. In 1924 he was appointed Assistant Engineer in the Engineer-in-Chief's Office, and came to London to work in the Equipment Branch. Among other duties he wrote many specifications for the earlier director-type automatic telephone exchanges. In 1932 he became an Executive Engineer in the Telephone Branch, and was engaged on the standardization of automatic telephone plant. He retired in 1937. When war broke out in 1939 he obtained an appointment with the Ministry of Home Security, but the work overtaxed his strength and, suffering from anaemia, he had to give up in the spring of 1945. He was apparently on the road to recovery when a sudden attack of cerebral haemorrhage caused his death.

He was very popular with his colleagues and was a founder-member of an office social club, of which he was Secretary for many years. From 1940 to 1942, he was a member of the Committee of Management of the Royal Scottish Corporation, a charity founded to help Scottish people in distress in London.

He joined The Institution as an Associate Member in 1922 and was elected a Member in 1944. A. J. G.

WILLIAM BURTON, M.Eng., died at the age of 59 at his home in West Hagley, Worcestershire, on the 10th February, 1946, after an illness of a few months. He was born at Northwich, Cheshire, and was educated at the Central High School, Manchester, and Liverpool University. Before joining Ferranti, Ltd., at Hollinwood in 1909, he was with the National Telephone Co. From 1914 to 1919 he served with the Royal Engineers, being commissioned in 1915. From 1919 to 1924 he was with the Birmingham and Midland Motor Omnibus Co., which at that time was associated with the Shropshire, Worcestershire and Staffordshire Electric Power Co. He was transferred to the latter Company in 1924, and continued with them until the time of his death, when he held the position of Assistant Distribution Engineer and Chief Technical Officer. Like many other members of the Company's staff, he joined the Home Guard in 1940, and held a commission as a Platoon Commander in the Halesowen Battalion.

He was reserved in disposition, but was upright and true, painstaking and conscientious, a most willing helper to anyone, or any cause, in need, yet with a sense of humour which delighted his many personal friends. His colleagues sincerely mourn his loss, especially the members of the South Midland Centre, where his presence will be sorely missed.

He joined The Institution as an Associate Member in 1912 and was elected a Member in 1930. He served as a member of the Committee of the South Midland Centre from 1927 to 1937 (Chairman, 1934-35), and again from 1944 until the time of his death. He was also an Associate of the American Institute of Electrical Engineers, and an Associate Member of the Institution of Automobile Engineers. H. H.

CHARLES EDWARD FAIRBURN, M.A., died suddenly on the 12th October, 1945, in his 59th year. He was born in Bradford in 1887, and in 1905, while attending the Grammar School, won an open scholarship to Brasenose College. He remained at Oxford for five years, reading mathematics and, later, as a Senior Hulme Exhibitioner, engineering. He was the first man to take engineering at Oxford and he secured a first class in the Final Schools, having earlier taken firsts in the mathematical

Moderations and Final Schools. After three years as a pupil in the Derby Locomotive Works of the Midland Railway, he joined the staff of Siemens Dynamo Works. His first important practical experience of railway electrification came with the Newport-Shildon scheme.

During the First World War, as an experimental officer in the R.F.C. and the R.A.F., he was engaged in pioneer work, ultimately in command of a squadron at Orfordness, engaged in the development of night and blind flying. He left the R.A.F. in 1919 to take up traction work with the newly formed English Electric Co. He remained with this company until 1934, and, while his connection with the technical aspects of railway traction work was unbroken during this period, his administrative capacity brought him additional responsibilities, in 1926 as General Manager of the company's Preston works and later as General Manager of the Stafford works also.

In 1931 his work again became centred on railway electrification and he spent much time abroad. In all, by 1934, he had been engaged in work on 49 different railways. In that year he became Chief Electrical Engineer to the London, Midland and Scottish Railway, remaining also Chairman of the contractors' committee for the Polish railway electrification. In 1938 he was appointed Deputy Chief Mechanical Engineer also, and in 1944 he became Chief Mechanical and Electrical Engineer. While with this railway, he undertook one entirely new electrification scheme and re-equipped existing services. He contributed largely to the development of the Diesel-electric shunting locomotive in this country, and was much interested in works practice and general organization. During the Second World War his versatility found full scope in maintaining the railway stock and plant in intensive use, while turning out large quantities of war equipment with depleted resources.

He was outstanding in his combination of engineering ability, based on a firm grasp of first principles, with wide managerial and commercial experience. He had great confidence in his own decisions, but the views of others always received due regard. Although in failing health, he was at work on the day before his death. There remained much that he had hoped to do.

He was a member of numerous railway, governmental and other committees and the author of a number of valuable papers on railway matters, including "The Trend of Design of Electric Locomotives," read before The Institution in 1938, for which he was awarded a premium.

He became a Member of The Institution in 1935, and served on the Council from 1937 to 1939. In 1940, he delivered the Faraday Lecture.

He is survived by his widow, a son and a daughter. H. B. B.

JOSEPH JOHN FASOLA was born on the 29th May, 1881, and died on the 7th February, 1946. He received his early education in Switzerland, and his engineering education at the City and Guilds College, where he was awarded the Siemens Medal. On the completion of his training in 1901 he joined the works of the Oerlikon Co. in Switzerland, where he quickly acquired skill in the preparation of projects for the generation, transmission and distribution of power in all parts of the world, including the transmission by the Thury system between St. Maurice, Lausanne and Geneva at 80 000 volts, direct current. In 1906 he joined the Lahmeyer Electric Co., London, whose international connections also gave the young engineer scope in the applications of electrical engineering destined for this country and for overseas countries. From 1911 to 1913 he was London Manager of the Electrical Department of Sandycroft Ltd., and for the next three years, in association with Mr. W. O. Rooper, he was Consulting Engineer and Inspector for John Taylor and Sons, being concerned principally with mining machinery. Then

followed five years as Chief Engineer to J. B. Corrie et Cie, Paris, in which position he handled a very wide range of machinery and heavy plant. From 1920 to 1922 he was Managing Director of the Avance Oil Power Co., and from 1922 to 1924, London Manager of Sandycroft Ltd. In 1925 he was appointed Managing Director and Chief Engineer of the Luth and Rosen Electric Co. Six years later he went to David Brown and Sons as Deputy Chief Engineer. For the 13 years prior to his death he was Technical Sales Manager to Lodge-Cottrell, Ltd.

Wherever he joined forces he was admired for his outstanding abilities; his mastery of languages—French, Italian and German—was invaluable, as his connections and friends were international; he found and made friends everywhere. He is survived by his widow and one son.

He joined The Institution as an Associate Member in 1907 and was elected a Member in 1931. G. W.

ARTHUR JOHN FULLER was born at Brighton on the 10th January, 1870, and died at Saltdean on the 14th February, 1946. At the age of 16 he left Brighton Technical College and began his professional career with the House-to-House Electricity Supply Co. (later renamed Brompton and Kensington Electricity Supply Co.). At Brompton he was brought into constant contact with Robert Hammond, who, recognizing his outstanding abilities, offered him a position on his staff (1890). In this position he was associated with Hammond in the layout and erection of, among others, the electricity undertakings at Wakefield, Newport, St. Helens, Blackpool, Leeds and Ayr, and was entrusted with the erection of the plant and laying of cables. In 1897 he entered municipal service as Burgh Electrical Engineer to the Ayr Corporation. He designed and carried out extensions at Ayr and also acted as consultant for the equipment of the Ayr Corporation Electric Tramways.

In 1903 he was appointed Borough Electrical Engineer at Fulham, and from that date the undertaking made remarkable and steady progress. He acted as consultant for the various extensions of plant in the old Fulham station and in 1929 was appointed Joint Consulting Engineer with Preece, Cardew and Rider in the design and erection of the Fulham base-load generating station. During the 1914–18 War he was a District Engineer of the Metropolitan Munitions Board and served as a member of special committees set up by the Home Office. After the war he was appointed a member of the Ministry of Labour Arbitrations Board. His professional activities included the secretaryship of District Council Area No. 10 (employers' side) and of the Wages Conference. He also served on a number of committees of the E.R.A. and of the B.S.I. He retired from the service of the Borough Council in 1935, but continued to act as Joint Consulting Engineer in connection with the new power station until October, 1936; and his services were retained for a period of two years from the date of his retirement as a consultant adviser for the whole of the Fulham undertaking.

He was a great engineer and a great man, esteemed by everyone for his ability and his kindness.

He became a Member of The Institution in 1912. He was also a Past-President of the Incorporated Municipal Electrical Association and of the Associated Municipal Electrical Engineers, and a member of the Council of The Institute of Fuel.

W. C. P.

CAPTAIN JOHN GERALD HINES, who died suddenly on the 16th September, 1945, at the age of 68, had spent over 43 years with the Post Office Engineering Department. In his early years he was associated with the preparation of the scheme for "telephoning" London, and subsequently supervised the installation of some of the early common-battery exchanges. On his

transfer to the Engineer-in-Chief's Office in 1905, he compiled the "Technical Instructions" dealing with methods of underground plant construction, which included the use of various appliances which he had himself developed. In 1911 he returned to the London Engineering District as Executive Engineer in charge of the City Internal Section. During the First World War, after serving in Mesopotamia, he returned to England to organize training courses for Royal Signals officers and men. After the war he was put in charge of the Technical Section of the London Engineering District, and was soon actively engaged on layout schemes in preparation for the introduction of automatic telephony. Later, as Assistant Superintending Engineer, he was responsible for the execution of these schemes. In 1931 he returned to the Engineer-in-Chief's Office as Staff Engineer in charge of the Lines Branch: a period of great activity ensued, during which the main trunk lines were converted to underground four-wire circuits and the "on demand" method of handling trunk traffic was introduced. He retired from the Post Office in 1937. During the Second World War he became Secretary of the Telephone Cable Makers Association.

He was interested in all aspects of plant provision and made noteworthy contributions to the literature on the subject. In 1925 he was awarded the Senior Silver Medal of the Institution of Post Office Electrical Engineers for a paper on "Layout of Multi-Exchange Areas," and in 1929 he was awarded a Premium for his paper on "The Anticipation of Demand, and the Economic Selection, Provision and Layout of Plant (Telephone Systems)." He also took a great interest in the development of international telephony, and was chief British delegate at the third conference of the C.C.I.F. But his activities were not confined to his busy professional life: he was very interested in church affairs and in the welfare of young people. He was ardent in all that he did, and the memory of his kindly personality and high qualities will remain with those who were privileged to know him.

He joined The Institution as an Associate Member in 1921 and was elected a Member in the same year. F. O. B.

WILLIAM BENISON HIRD, B.A., was born in Paris, and died at Fernicarry, Garelochhead, on the 13th January, 1946, in his 82nd year. He was educated at Bedford Grammar School and Trinity College, Cambridge. For many years he occupied a leading place in the electrical industry of Glasgow and the West of Scotland, spending 37 years with Mavor and Coulson, and retiring at the end of 1933 with a notable record in the development of electricity in industry. He was a pioneer in the scientific work connected with the application of electrical power to marine propulsion. At a later stage he devoted himself principally to developing the design of electric motors for mining service.

He became a Member of The Institution in 1900, serving as an ordinary member of the Scottish Centre Committee 1925–26 and 1934–37, as Vice-Chairman 1918–19, and as Chairman 1919–20. He was also actively identified with the work of the B.E.S.A. (now the B.S.I.) in arriving at standard specifications for dynamos and motors, and was at one time Lecturer in Dynamo Design at the Royal Technical College, Glasgow. Four of his numerous technical papers were published in the *Journal*, among which may be mentioned "Weight Efficiency of Electric Motors and of Prime Movers" (1912) and, in collaboration with J. B. Mavor, "Electrically Driven Underground Conveyors in Coal Mines, and their Economic Advantages." R. B. M.

WILLIAM CRANSWICK LAIDLER, who died on the 18th November, 1945, at the age of 72, received his early education at Darlington Grammar School and his engineering

education at Manchester Technical School. After serving an apprenticeship with F. H. Royce and Co., Manchester, he remained with that Company, first as a draughtsman and later as Mr. Royce's assistant. In 1897 he joined the Sunderland Forge and Engineering Co. as Manager of the Electrical Dept., and in 1904 he went into business on his own account. Four years later he obtained an appointment with the A.E.G. as Sectional Manager of the Plant Dept. In 1912 he was appointed General Manager of the Buenos Aires Provincial Supply Co., and two years later became Managing Director. He resigned in 1930 owing to ill-health.

He became a Member of The Institution in 1914, and was elected Chairman of the Argentine Local Centre in 1920.

W. M. R.

CHRISTOPHER LEONARD LEWIS was born at Abergavenny in August, 1885, and died at Plympton, as the result of an accident, on the 23rd January, 1946. He was first employed by the Ebbw-Vale Steel, Iron and Coal Co. On leaving that Company he was put in charge of the Ogmere and Garw Electricity Undertaking by the late Sir Arthur Ellis, of Cardiff. When the Plympton Rural District Council's scheme was being prepared by Mr. Ellis, Lewis went to Plympton as Resident Engineer, and upon the commencement of the electricity supply in 1928 he was appointed Electrical Engineer.

He joined The Institution as an Associate Member in 1935 and was elected a Member in 1943. He served on the Committee of the Devon and Cornwall Sub-Centre from 1942 to 1945.

R. R.

FRANCIS HARMAN LEWIS was born on the 18th June, 1863, and died on the 6th December, 1945. He received his engineering education at the Finsbury Technical College, and his practical training with the Electrical Power Storage Co. After spending a year with the Westminster Electric Supply Corporation and nine months with the St. James and Pall Mall Electric Light Co. as an assistant engineer, in 1891 he was appointed Borough Electrical Engineer at Hull, when he designed and erected the first power station for the Corporation, the total capacity being 400 kW. Two years later he obtained a similar appointment at Wolverhampton. He had been one of the first to recognize the advantage of high-voltage distribution with substations, and he had the courage to recommend a modification of the Oxford system using 2 000-volt direct current. In the substations the voltage was reduced to 200 volts on the outers of a 3-wire system by means of motor-generators; the substations were unattended. He left Wolverhampton in 1898, although still retained as a consultant. The following year he was appointed Electrical Engineer to the Urban District Council of Leyton. The power station contained, at first, a Dowson gas plant; later steam was added. Subsequently he saw the advantage of taking a bulk supply from his larger neighbours. He retired in 1928, and eventually settled in Wilmslow with his son. He was a good photographer, and was keenly interested in astronomy. To the end of his life he followed every new development of electrical engineering, and was proud to have played a part as a pioneer.

He joined The Institution as an Associate in 1891 and was elected a Member in 1921.

E. T.

ENRIQUE WALTER MARTIN, who died on the 15th March, 1945, at the age of 73, received his technical education at the Glasgow and West of Scotland Technical College, and his practical training with Dübs and Co., of Glasgow. From 1892 to 1898 he served on the staff of Messrs. Ferranti's Contracts Department, being appointed Engineer-in-Charge of that De-

partment in 1894. In 1898 he went to Chile, where he remained for the rest of his life. His first appointment was that of Engineer and Manager to the Chilean Electric Tramway and Light Co., Santiago, his second that of representative in South America of Bruce Peebles and Co. In 1906 he went into practice as a consulting engineer in Valparaiso, and in 1907, together with his brother, he founded the firm of Martin Bros. His subsequent history is that of the firm, among whose interests may be mentioned the Electric Light Co. in Viña del Mar, which was afterwards taken over and enlarged by the Cia. de Refineria de Azúcar de Viña del Mar; nitrate plants in the north of Chile; and coalmines in the south.

He joined The Institution as an Associate in 1894 and was elected a Member in 1907.

WILLIAM RICHARD MAY was born on the 12th July, 1869, and died in the summer of 1945. He received his early education at Maidstone Grammar School, and served an apprenticeship with the Kentish Engineering Works, Maidstone. After sailing as a marine engineer for nine years, in 1899 he went to the Stockport Corporation Electricity Works as a charge engineer. In 1903 he was appointed Chief Assistant Engineer to the Lowestoft Corporation, and, ten years later, Borough Electrical and Tramways Engineer. He retired in 1936.

He joined The Institution as an Associate Member in 1908 and was elected a Member in 1930.

JOHN WILLOUGHBY MEARES, C.I.E., was born in 1871 and died on the 11th January, 1946. He received his general education at Winchester, where he was awarded the Selborne prize for Natural Science and the Duncan prize for Mathematics. He received his engineering education at University College, London, and his practical training at Crompton's. After a year at the Hove electricity works, and some work on Crompton's outside staff, he went to India as an assistant to Kilburn and Co., for whom he erected the municipal hydro-electric plant at Darjeeling—the first hydro-electric works in the country.

In 1898 he was appointed Electrical Engineer and Inspector to the Bengal Government. While holding this office he drafted the first Indian Electricity Act and Rules of 1903, and also published a commentary on them, which in later editions of "The Law Relating to Electrical Energy in India and Burma" has become a standard work. He also gave two courses of lectures at the Sibpur (now Bengal) College of Engineering, which formed the nucleus of his "Electrical Engineering Practice."

In 1905 he was appointed Electrical Adviser to the Government of India, a position from which he retired in 1924. During this period the earlier legislation was more than once brought up to date with the help of his colleagues in the various Provinces. For the three years prior to his retirement, he was Chief Engineer of the Hydro-electric Survey of India, which published some valuable reports on the water-power resources of the Indian Empire, and he subsequently took charge of this subject in connection with the "Rating of Rivers" for both India and Great Britain at meetings of the World Power Conference and the I.E.C. In 1922 he was made a C.I.E.

His natural ability, together with his training and subsequent experience, fitted him admirably for his work as Electrical Adviser to the Government of India. The statutory provisions, for which he was mainly responsible, are simple compared with the corresponding Acts and Regulations of this country, but they have been found to be adequate and they provide a fine example of Meares's clear vision on matters involving legal, administrative and engineering principles.

He joined The Institution as an Associate in 1894 and was elected a Member in 1898. He served as Local Hon. Secretary

for India from 1910 to 1920, and as Chairman of the Calcutta Local Centre from 1919 to 1923. His papers on "Air-cooled Jacketing in Hollow Walls" (1913) and "General Principles of the Development and Storage of Water Power" (1919), were published in the *Journal*. He played an active part in the formation of The Institution of Engineers (India), just as, thirty years earlier, he had been a founder member of the British Astronomical Association. He was also a Fellow of the Royal Astronomical Society.

After his retirement from India he was greatly handicapped by deafness, and in consequence his visits to The Institution became fewer. He was not, therefore, widely known among the present members, but those who know of his work in India will always regard him as one of the greatest electrical engineers of our time. He married twice and leaves two sons. H. N.

JOHN HAMPDEN PARKER, who died on the 4th January, 1946, after a long illness, was born in February, 1881, at T'sin cheo, North-West China. He was the eldest son of a missionary; as the nearest schools were far out of reach, his first gleanings of knowledge came from the books in his father's library—those on scientific subjects making the greatest appeal.

Coming to England at the age of ten, he was educated at Coombe Down School, Bath, and the Royal Technical College, Glasgow. After serving an apprenticeship with Alley and MacLellan, he entered the Greenock Corporation Electricity Department as a draughtsman in 1904. Promotion was rapid, and before leaving he had reached the position of Chief Assistant Electrical Engineer. In 1915 he was appointed Deputy Electrical Engineer at Croydon; and in 1925 he became Borough Electrical Engineer of West Hartlepool, to which post were later added the responsibilities of Transport Manager. Probably the best known feature of his work at West Hartlepool was the conversion of the tramway system to trolleybus working. Five years later he was appointed Electrical Engineer of the L.C.C. Tramways Department; and after the formation of the London Passenger Transport Board he subsequently held the positions of Electrical Engineer (Distribution) and, from 1939 to his retirement, Chief Electrical Engineer. It is hardly necessary to add that the experience he gained at West Hartlepool proved invaluable when London Transport converted the tramways north of the Thames to trolleybus operation. Any account of his professional career would be incomplete without recording that he enjoyed a well-earned reputation for skilful and fair negotiation.

Throughout his life he was deeply religious, and as a preacher he was in great demand. Helped by his wife, he devoted a large part of his leisure to the welfare of young people. He never failed to turn a sympathetic ear to the misfortunes of others; and in his professional as well as private life his courtesy and kindness made him loved and respected by many friends. He was one of the early champions—although his own position would have made it easy to stand aloof—who fought for supply engineers in their battles to secure adequate status and reasonable remuneration and treatment.

He joined The Institution as an Associate Member in 1906 and was elected a Member in 1926. He served on the Committee of the Tees-Side Sub-Centre from 1926 to 1929. A. L. L.

FRANK PARKINSON, LL.D., who died at his home at Sunninghill, Berkshire, on the 30th January, 1946, was born at Guiseley, Yorkshire, on the 7th February, 1887. He received his engineering education at Leeds University and his practical training with Rhodes Motors, Ltd., Doncaster. In 1909 he founded the firm of F. Parkinson and Co., and undertook the manufacture of a.c. motors of all types. He was joined later

by his brother, Albert, the firm being known as F. and A. Parkinson, Ltd. In 1927 an amalgamation was arranged with Crompton and Co., and he became Chairman of Crompton-Parkinson, Ltd. The remarkable development of this concern and of its associated companies in the space of a few years was primarily due to Frank Parkinson, whose abilities in administration, industrial finance and electrical manufacture were widely acknowledged; but he always recognized that he owed his success largely to the loyalty of his employees, and he was ever mindful of their welfare. He established works in Australia, India and New Zealand for the manufacture of standardized products, interchangeable with those built in this country. His contribution to the war effort was considerable: he equipped a small-arms factory in record time; and he served as Assistant Director of Contracts in the Ministry of Supply until forced to resign through failing health.

He was of a generous disposition, but very reticent about the assistance he gave to any good cause or to individuals. It was characteristic of him to remark, when making a handsome donation to the funds of Leeds University, that he considered himself but a trustee for whatever worldly possessions he had. For many years he had taken a keen interest in dairy farming, and was very successful with a 3 000-acre mixed farm and with his herds of pedigree cattle.

He joined The Institution as a Student in 1908 and was elected an Associate Member in 1912 and a Member in 1925. He served on the Committee of the North Midland Centre from 1925 to 1928. J. H. J.

PEDER OLUF PEDERSEN was born on the 19th June, 1874, and died on the 30th August, 1941. The career of this eminent Danish scientist and radio pioneer started in an extraordinary way. A poor peasant boy, he designed, at the age of fifteen, a perpetual-motion and a computing machine and sent the drawings to the King. These displayed such excellent gifts that the King personally granted him means for his education as a civil engineer at the Royal Technical College, Copenhagen.

Having graduated, he soon became associated with the Danish inventor Valdemar Poulsen. Their first development was Poulsen's magnetic tape recorder (telegraphone or magnetophone). When, in 1902, Poulsen invented the arc generator for continuous waves, Pedersen co-operated in the development of the extensive technique that was necessary, and later he formulated a complete theory of the Poulsen arc.

In 1909 he became a lecturer, and in 1912 Professor, of Electrical Communication at the Royal Technical College—the first chair of this sort in the world. Having earlier shown his ability for scientific work by gaining, in 1907, the gold medal of the Royal Danish Society of Sciences for a paper on the surface tension of liquids, he now carried out a series of investigations: on the Lichtenberg figures, which he used for the measurement of very short periods of time (10^{-7} – 10^{-9} sec), especially the time-lags of electrical sparks; on sub-harmonic oscillations; on several new electrical measuring instruments; on acoustical problems; and on the depreciation of public utilities. His book, "Propagation of Radio Waves" (1927) was the first thorough treatise on the relations between radio-wave propagation and conditions in the upper atmosphere, and contained important contributions to the theory of waves in ionized air in the presence of a magnetic field, the reflection of electromagnetic waves, and the paths of meteors.

From 1922 until his death, he was principal of the Royal Technical College, Copenhagen, and proved an excellent administrator. He succeeded in obtaining for the College considerable extensions of its buildings and laboratories. The erection of the new buildings was commenced in connection with the centenary

of the College in 1929, and the building programme is still in progress.

In 1937 he took the initiative in founding a Danish Academy of Technical Sciences. He became its first President and within a few years established it as an important institution for promoting technical and scientific research in Denmark.

He became a Member of The Institution in 1924. J. R.

PERCY ROSLING was born at Reigate on the 16th November, 1867, and died at Lower Bourne, Farnham, on the 13th December, 1945. He was educated at Queenwood College, Hants, and was apprenticed with W. T. Henley's Telegraph Works Co. from 1887 to 1891. After leaving this company he was in business partnership until 1903, when he joined the British Thomson-Houston Co. Subsequently he rejoined Messrs. Henley's and was their Manager in Australia from 1906 to 1913. In that year he returned to England and was General Manager until his retirement in 1932.

His passing has reduced still further the thinning ranks of those whose careers in the electricity industry commenced in the pioneer days of the 1880's. Although in recent years he had lived in retirement, he will be remembered by many of the older members of the industry as a man of unflinching courtesy and charm.

He became a Member of The Institution in 1900, when he was transferred from membership of the Northern Society of Electrical Engineers. He served as an ordinary member of the Council, 1923-26, and as Hon. Treasurer, 1932-34.

FREDERICK SAMUELSON, who died at his home in Rugby on the 21st January, 1946, was born at Hedemora, Dalarne, Sweden, on the 2nd April, 1866. He was associated with the British Thomson-Houston Co. for 44 years, having joined the staff as chief draughtsman on the 1st May, 1897. After some practical engineering training and a three-year course at the Technical School, Stockholm, whence he gained scholarships which enabled him to come to England in 1887, he worked for a year with Sir Hiram Maxim on the quick-firing gun and flying machine. For the next nine years he was with Vickers, Ltd., at Erith. He joined the British Thomson-Houston Co. in 1897, and was in charge of the Turbine Department from its inception in 1903 until 1939, when he relinquished that appointment and the seat on the Board of Directors, which he had occupied since 1934. He then devoted his attention to consulting work until his retirement in 1941.

He was one of the pioneers in the development of the steam turbine in Great Britain, seeing it grow from the simple Curtis-type two-stage velocity-compounded vertical machine of 500 kW to the 75 000-kW multi-stage horizontal turbo-alternator as installed in Barking Power Station. His reputation was world-wide, and following the successful operation of the first 10 000-kW, 3 600-r.p.m., extra-high-temperature (1 000° F) steam turbine, which was built under his personal supervision for the Detroit Edison Company, U.S.A., came the development of the jet-propulsion gas-turbine in association with Air Commodore Frank Whittle.

In 1899 he married Ruth Wikstrom, who died in 1915. In 1921 he married Vivi Palmgren. He is survived by his widow, the four children of his first marriage and the two children of his second marriage.

He became a Member of The Institution in 1915. He was also a Member of The Institution of Mechanical Engineers and of the Swedish Engineers' Society, London. In 1932 he was honoured by the King of Sweden, who conferred on him the Royal Order of Nordstjärnan. Engineers throughout the world mourn the loss of one of the most talented engineers of our time.

G. W. P. P.

THE REV. ARTHUR JAMES STUBBS was born on the 20th July, 1861, and died at Croydon on the 8th December, 1945. Before taking holy orders at the age of 70, he had had a distinguished engineering career. He entered the Post Office Engineering Department as a clerk in 1880, and became a 2nd Class Technical Officer in 1887 in charge of the designs section and drawing office. In 1899 he was promoted to the 1st Class, and in 1902 was appointed Superintendent Engineer in charge of the Metropolitan North District, a position which he held for five years. With the exception of this period, his service was spent entirely in the Engineer-in-Chief's Headquarters Office, to which he returned in 1907 as Assistant Engineer-in-Chief. On his retirement from the Post Office in 1921, he joined the firm of Sir Charles Bright and Partners. He was ordained priest in 1932.

For some years he was Examiner in Telegraphy and Telephony to the City and Guilds of London Institute. He was also the author of a number of papers, including that on "A Case for the Adoption of the Metric System (and Decimal Coinage) by Great Britain," which was published in the *Journal*, and, in collaboration with Sir William Price, he was joint author of the "Manual of Telephony."

He possessed considerable scientific and engineering ability allied to a charming personality; as a designer he made outstanding contributions in improvements of the design of telegraphic equipment; as a man he was esteemed and loved by all who came in contact with him.

He joined The Institution as an Associate in 1888 and was elected a Member in 1903. He served on the Council from 1926 to 1929. He was also a Member of The Institution of Civil Engineers.

A. J. G.

HAROLD LANGTON TYSON-WOLFE, who died on the 10th December, 1945, at Parkstone, Dorset, was born on the 31st May, 1876. After spending some years in London as an adviser on electrical installations and X-ray work, he joined the Electrical Department of the East Indian Railway in 1903. In 1920 he was appointed Chief Electrical Engineer. During his administration, the whole of the more important railway stations, railway settlements and mechanical workshops were provided by his department with electrical installations. He was also responsible for the design, erection and subsequent operation of all these installations, and for the design and erection of the very large electrical installation of the Giridih Collieries. After 25 years in India he returned to England and spent his retirement at Canford Cliff near Bournemouth, using his leisure in designing large telescopes.

He joined The Institution as an Associate Member in 1902 and was elected a Member in 1906.

W. M. R.

JAMES WHITEHEAD was born on the 3rd May, 1866, and died on the 30th November, 1945. He was one of the old school of telecommunication engineers, having graduated from the ranks of the telegraphists. He joined the Post Office at Liverpool in 1882, and attended evening classes at the Liverpool School of Science and Technology. In 1892 he became a relay clerk, and his subsequent advancement was to Engineer, 2nd Class (1896), Engineer, 1st Class (1902) and Executive Engineer (1911). During his later years he was Sectional Engineer at St. Albans. He retired from the Post Office in 1925.

He knew how to appreciate and encourage a loyal staff and he had a ready understanding of character which enabled him to get the best service and workmanship from his assistants. He is remembered by his fellows as a wise and tolerant colleague, whose advice was always available and always valuable.

He joined The Institution as an Associate Member in 1921 and was elected a Member in 1922.

A. J. G.